

1/3

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*      20      *      40      *      60      *
axmi007 : -----VNQN--NNNVEEIDSKNLSYPSMRNIDHSRMYTNNPNOPNNTNREELNMCNGTQYGDNFETFA : 67
cry1Aa : -----MDNMP-----NINECIPNCLSNDEVEELGG----- : 26
cry1Ac : -----MDNMP-----NINECIPNCLSNDEVEELGG----- : 26
cry1Ia : -----MKLKQDQKHOSFSSNAKVD-----KISTDS-----LKQETDIEFQNIHEDCKSSYEN----- : 50
cry3Aa1 : MIRKGGKRNPNMRSRSHDTIKITENNEVPTNHVQVSLAETNPPTLELWKEFPRATADNN-----TE : 63
cry3Ba : MIRKGGKRNPNMRSRSHDTIKITPASELPTNHVQVSLAETNPPTLELWKEFPRATADNS-----TE : 63
cry4Aa : -----MNPYQKQSEETLNASQKKLN-----LSNNTYRMLIESEKQLDQSTNKKDULNMCNQNQQ-----YGG : 59
cry6Aa : ----- : -
cry7Aa : -----MLMNLDDGYEDSNR-----TLNLSLNNITOKALSPSKMMNQDPSHTREQP----- : 49
cry8Aa : -----MSPNNQSEETIDATPSTS-----VSSDSNRMYFAETIDAHQMMNMDYKMSGGENPEL-----FG : 58
cry10Aa : -----MNPYQKQSEETLNAPSPGFS-----KSMNYSRMLAKENQPPKNTNNDULNMCNQNQQYGN-----AG : 62
cry16Aa : -----MHYYGMRNEDLNASSQDS-----MNSNTYPRMLAPQODLQONTNKKDULNMCNCGYHENP-----RE : 61
cry19Ba : -----MNSYQKQSEETIDAKRNTC-----HMSNCYPKMLANDQMYPRNTHNNDULNMCSEASYAS----- : 58
cry24Aa : -----MNOYQKQSEETIDSSQNMN-----MPNRMYFAEDENAVKMGKTKDULNMCNCGSN----- : 52
      n ey      n      yp      p      nykd

      80      *      100      *      120      *      140      *
axmi007 : ADTIAAVSAGTIYSGHLEACHGELTSISGPIGIIAIIISGTHITVFAAGEQDKTYVTOPIKMGIFVMTPT : 142
cry1Aa : -ERIEITYPTDISELSTOPISEF-----VGCAGYVLGLVDIWHGIFGDSQ-----ADAPVQVQDLMQDSE : 89
cry1Ac : -ERIEITYPTDISELSTOPISEF-----VGCAGYVLGLVDIWHGIFGDSQ-----ADAPVQVQDLMQDSE : 89
cry1Ia : -VEPFVSASTIQTGCHAGQDCTIG-----VFCAGQASLSPFNGELNKG-----KNQETIDAEHAEEDQDQKIS : 117
cry3Aa1 : ALDSSTKDVHOKGDSVQDHLGVVG-----FPGGARVSYFTNFNTIIES-----EDPKAKHEQMAAHMDQIA : 130
cry3Ba : VLDSTVKDAGTCTGSAVQDHLGVVG-----VFCAGATSFYQSFNAITLSD-----ADPKAKLQAOQVHMDQKE : 131
cry4Aa : DFETTFIDSGELSAITTVGTVTGFG-----FTPLGLALIGGTLIPPLFAAQDSN-TQSDPTTUTKMLCKELA : 130
cry6Aa : ----- : -
cry7Aa : -EALASGNTAINTVSEYIETATSAIG-----VGCASHTNFKLHAGLLEENG-KI-DEEETETEAADQKE : 116
cry8Aa : NPETFISSSTIQTGCHGVCNGLGALG-----VCFASQHASFSFNGQLDESKS-----VDIAGEIIEVDFLVQDKE : 127
cry10Aa : NFASSETIVGSAGHIVGTVGAFAPA-----AFVLAAGTISEGTHIPFNGGSDPAN-----VWQDELNMGGRPIQED : 131
cry16Aa : ASVRAGLGKGLCTVSYTVGFFGES-----IILDITGLVYONSELEPEDDTQOQYTMODIENHEDLMDKKEIT : 128
cry19Ba : S-----GPSQLFKVGGSEVAKDGL-----MIPGCPLLSUMSSTFMTIEEKNTVIEDMKYQANLHKEIT : 120
cry24Aa : -----ISPSAAATTSKIVSTWKTAKAVASSLDSIKSSLGISKITHNNVS-----QVSTVQVHODDQREIQ : 117
      g lg      p      p      w f e q

      160      *      180      *      200      *      220
axmi007 : ESTIQLKQDTEFQRIHQ-SQNTADDKRLKRLQAPGLPPSSALQQAALTAKIRFENVHNDPFEIPGQLE- : 215
cry1Aa : EFASQNMRSRHEHSLYQ-IYAESFREDEADPTN-----PALREERIQDNDNSALTITAEFLAVON--- : 152
cry1Ac : EFASQNMRSRHEHSLYQ-IYAESFREDEADPTN-----PALREERIQDNDNSALTITAEFLAVON--- : 152
cry1Ia : TYARKNMTDQKGLGADA-VYHDSSESVCGRNN-----TRARSVKSONIAPELMVOKHESFAVSG--- : 180
cry3Aa1 : DYARKNMAEHOHQQDQNE-DYVSASSSOKKPVSS-----RNPHSQGRRELISQAESHNRNSHESFAISG--- : 196
cry3Ba : EYARKNMAEHOHQQDQNE-DYVNADSSKKAPVNL-----RSRRSQGRRELISQAESHNRNSHESFAVSK--- : 197
cry4Aa : STYISNMKILNRSFVLS-TYHNDKTEENPN-----PQNTQDRTQIQQLHYHQNVDIELVNSCPPN : 195
cry6Aa : ----- : -
cry7Aa : EYVARKMAEDDEGSARD-KKQKADADLGKQDD-----PEAILSEATEBRIDSLSEFSHSPKVTG--- : 179
cry8Aa : KYVARKMAEADKGLGARD-VYQQSSEDLEMRND-----ARTRSVYSNQTAPDLNVSSHESFAVSG--- : 190
cry10Aa : KNITLVLTSLTPKQDLD-KYQEFFDKDEPARTH-----ANAKADHLDTTPEPIIDKDMDHLKNAS--- : 194
cry16Aa : EVIRGNMRTADQKQVD-DYNNMFKKKQDDP-----KSTGNLSTEVTKTAPDSNGAARTVNNQGPS- : 193
cry19Ba : NDTLRNTSNSESENESEN-INNRADAAKQK-----NNFASGELRSYINDPHILSTRDQSDFSLG--- : 183
cry24Aa : ETTLGLLESSNCHVAIYNRDLGADFAANNKSN-----INYQTMAEAKTVERESTFKKGIYRFS-- : 182
      a      g      y l w      f      p

      *      240      *      260      *      280      *      300
axmi007 : -----TKTLLEPTIQAQANHHHMLQQGAELADEUNADIHPSQIEPHAGTSDDKTK-LKENTPKYSEMGANTY : 284
cry1Aa : -----KQVPLSYYVQAHHHHSMLRDVSVFG-----QRGEFDAATNSRN-DLTRLIGNVTDYARON : 211
cry1Ac : -----KQVPLSYYVQAHHHHSMLRDVSVFG-----QRGEFDAATNSRN-DLTRLIGNVTDYARON : 211
cry1Ia : -----EAVPLPIYAQAANHHLLLDASIFG-----KEDELSSSESTPTN-RQVERAGDSHHEVKON : 239
cry3Aa1 : -----EAVLFTIYAQAANHHLLLDASIFG-----EEDEYEKEDHAEFYK-RQLKLTQETVHEVKON : 255
cry3Ba : -----EAVLFTIYAQAANHHLLLDASIFG-----EEDEYSSSEDHAEFYQ-RQLKLTQETVHEVKON : 256
cry4Aa : PSDCDYHMLVSSZAQAANHHHTLNQVYKDEAYLKNN-RQFDHLEPLPTAIDVTP-VLTKAIEDVHMGYITV : 268
cry6Aa : -----MIDSKITLPRHSLGHTIKLNSKKYC-----PGDITNGNQ-----FISKQEWATIGALI : 51
cry7Aa : -----EAVPLPIYAQAANHHHALLDSTBYG-----DKGEFTONNDEENRN-RQKRISESDHETKON : 238
cry8Aa : -----EAVLLAAYQAQVNHHTLLLDASIFG-----EEMCEFTPGESRFPYN-RQVQLTAEDSDYGVKON : 249
cry10Aa : -----EAVPLPAZQIHTHMLLKHATYNIQLON-----QGPNSTFSSNFGQYLKRIQETVHETKON : 260
cry16Aa : -----GAVLLEPVYAQIHHHTLLLDASIFG-----KGSARANARDNYIQ-IQLEKTEKTEYHETKON : 254
cry19Ba : -----GAVTVLPSYASAHNHHTLLLDVAIKY-----KELEYPTSDHEFYON-EQKYYTEKSEHETKON : 243
cry24Aa : -----SMTLLEPTIQAHHHSHLEDAVYQEG-----ENLQSHINGSKELDDALEDTVHGVYV : 239
      l      eqaan Hl L da      g      g      y      y      yc      y

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Fig. 1A

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380          *          400          *          420          *          440          *
axmi007 : NFDRLTYLEIQPN-----LAIMEYNLTSGLRNLSDEPHFVTKNETYGNRLVGIANNRSTYAN-----TG : 414
cry1Aa : LENFDGSGFRG-----MAQRIEQNMURQ-----HMHMDILNSTITVDVHRGFNYUSGHOITASPVGFSGP-----EF : 333
cry1Ac : LENFDGSGFRG-----SAQGIERSMS-----HMHMDILNSTITVDVHRGYYUSGHOIMASPVGFSGP-----EF : 333
cry1Ia : GTVHPHPSFTSTTWNNNNAPSFAIEAAVGMN-----HMLDPEEQTLKLLS-----RWSNTQYMNMGCH-----KL : 365
cry3Aa1 : VGVNMLRGYCG-----TTFSNIEINYEK-----HMLDPEYHRHOFHFRFP-----GYGNDSFNYUSGNYVST : 374
cry3Ba : FTLMALQEGY-----PTFSSIENSLEK-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry4Aa : FEESPYKYVD-----FOYQEDSTRR-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry6Aa : KSANDIASYG-----FKVAGDPSNMKDGYFKKLODE-----DNIVDNNSDDDAIAKAIKDFKARCGLIKEAK : 170
cry7Aa : SLISNPDIGP-----SFSQMENTAMT-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry8Aa : AFNIVSTGFCNPWSTHSGILFYEVENVNTP-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry10Aa : SDTRFTITLENG-----LTRN-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry16Aa : NGEIYGLMTPYFS-----FEKAESLYTSA-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry19Ba : MDHYVGLMVPYIS-----FEHAESLYTSA-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375
cry24Aa : GRDTPSPSGDWNTG-----RTLAFNMDLERETDS-----HMLDPEYHRGFEHFRLRP-----GYSKDSFNYUSGNYVET : 375

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*          540          *          560          *          580          *          600
axmi007 : -----TDFQFPYKKCKPPIINPNCLESYNSYSRILSOFSLFNYSYKIGLALNLIYTGALGNTSSSRMAASD : 558
cry1Aa : -----RCTVSLDLDVPPDMSVPRAGPSRLSHYTHLSQAAQ---AVYTLRAPSLSDHPSAEFNMIAS : 467
cry1Ac : -----GTSVSLDREPPDNNVPRAGPSRLSHYSHFRSGFSNS-SVSLIRAPESLSDHPSAEFNMIAS : 468
cry1Ia : PGYAGIG--TQLQSENEPBPPTAGQPMYESYSRSLSHGLISAS-----HYKALVNSLSDHPSAEFNMIAS : 504
cry3Aa1 : SKR---NVGAVSWSDIDQLPPTITDELEKAYSHQINNYCMFLMQGS-----RGITPVLITDTHSGVDFPMQDS : 514
cry3Ba : SKRY--NGYLGAVSDIDQLPPTITDELEKAYSHQINNYAECFLMODR-----RGITPVLITDTHSGVDFPMQDS : 517
cry4Aa : N-----IFGLPILRKENCQNPILFTPTDYMYSILSFKKSLIPAT-----YKTOVYTLDAHTESSVPMQNTYT : 535
cry6Aa : DLEKKVEYSFLLGPLLGFVVEILENTAVOHIKNQDEDDKKQLDSAQHDLDRDVKTLGLNLSINTDIDNLYSQGQ : 319
cry7Aa : -----DLTYSDIDQLPDG--EITHEKYSRLCHATAIFKSTP---DYDNATIPISLSDHPSAEFYVPIYTP : 494
cry8Aa : KHTHALQGCTQVYESSDEEDLDRT--VVAEYSRSLSHITSHSFKNK--SAYYGSFPVPLSDHPSAEFNMIAS : 523
cry10Aa : -----YKRTDSYHPIKQTKVNEELGKILSYKTKDNYIFSVVR---ERRRVAESLSDHPSAEFNMIAS : 507
cry16Aa : -----TDFDFLTG-----KGTGLAKYNDNAILSYHLINGETFGQ---KRHGYSAPPLSDHPSAEFNMIAS : 509
cry19Ba : -----TDFNFLG-----RAGNGPTTYNDNAILSYHLINGETFGQ---KRHGYSAPPLSDHPSAEFNMIAS : 503
cry24Aa : -----YPSLPITITTFGQSSSEGGANDYSLLCDKKLQEDSSNICE--GRSSLTSHAQPSLSDHPSAEFNMIAS : 512

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*      620      *      640      *      660      *
axmi007 : KLTNMDPAGNSDPTNSKVTCPCHTGENLYLQSQG-----RLEITCRTPNSQSYIRHRYANGAGNTL : 626
cry1Aa : SQITQDPLTSTNIGSGTSMKCPCHTGEDLERTSPG-----QISTLRVNTAPLSQRYNMTYASTTNLOPH : 537
cry1Ac : DSTTQDPAWKGNTLFGSVHS-CPCHTGEDLWFLNSSGNNIQNRGYIEVPIHFPSTGTYNMMRYASTVTPHILN : 542
cry1Ia : DSTTQDPLWAFNLSGCAAVCPCHTGEDLERTNTG-----TFGDIRVNIAPPFAQRYNMTYASTTNLOPH : 574
cry3Aa1 : KSTQDPLWAKYKQSGASWAFRPTCHTGEDLHCTE-----NGSAATLYVTPDVSYSQRYNMTYASTTNLOPH : 584
cry3Ba : EKSTQDPLWAKYKSSGASTIECPCHTGEDLFLKES-NSIAKFKVTLNSAALLQRYNMTYASTTNLRLF : 589
cry4Aa : HLTQDPAWKAANSIGTASKVVCPCHTGEDLIDFKD-----HFKITCQHSNFQSYIRHRYANGAGNTL : 601
cry6Aa : EAKVVFQKQGIWATIGAQHMLRTTSLQEQSDDADEIQIELEDAADLVVAQEARDFTLNAPSYNRSQNL : 394
cry7Aa : KSTQDPAWMYKDDPSTVYKCPCHTGEDLHRCSTG-----YIGDIKATVNSPLSQRYNMTYASTTNLOPH : 564
cry8Aa : DKSTQDPAWGDMLYLGSSVCPCHTGEDLERTNPS-----ILGTFVTVNGSLSQRYNMTYASTTNLOPH : 593
cry10Aa : DMSTQDPAWALKSSDSKVKCPCHTGEDLILKDS-----MDFRVFLKNVERQVQRYNMTYASTTNLOPH : 574
cry16Aa : EKSTQDPAWASSNGSISIEKCPCHTGEDLHNRADS-----GLTHRFKAELDRKRYNMTYASTTNLOPH : 577
cry19Ba : DKSTQDPAWNLGANKLIK-CPCHTGEDLHLEYER-----FLSLRIK-LIASMTYRQRYNMTYASTTNLOPH : 568
cry24Aa : DKSTQDPAWYELRGNSSVACCPCHTGEDLHMSYHS-----VUSFKVYCSELKNRYNMTYASTTNLOPH : 579
      itq pa k      gpgf3gg 6      q r r rYa

*      680      *      700      *      720      *      740      *
axmi007 : PMISLTIPGVIGIPPQRLNNFSGTNYN-PMQDPCGFQSPSTVTLPLNR--NIPFFNRAVSN-SIDIDKI : 697
cry1Aa : TSDIG-----RPINQCNFSADHSSGS--MQSGSERTVGTTPFMSNG--SSVFTLSAHVFNSGNEVYDQKI : 601
cry1Ac : ANWGN-----SSIFSNTVPATSLD--MQSSDPCGFESANATSSLG--N--TVGVRFPSGTACVYDQKI : 603
cry1Ia : TSHNG-----KATNQCNSFADHNRGE--DDVKTERTVGTTPFSLDV--QSTFTIGAMFSSGNEVYDQKI : 638
cry3Aa1 : TSDIG-----APFNQYYFDKLNKGD--TPTNSNENLASHPFELSG--NNLQIGVTGLSAGDKVYDQKI : 646
cry3Ba : VQNSN-----NDFLVIYINKQNDIG--DTYQITDQATSNMNGHSGD--TNDFTIGAESFVSNKQVYDQKI : 653
cry4Aa : AVINLSIPG--VAELGMAINPTFSGIDYTHPKDQMLESSNEVKAPNQ--NISLVFNRSVYVNTTLYDQKI : 672
cry6Aa : DMNISDSNCSTTMTSNQYSNPTTMTSMQYHISHEVTSLPNNFHLRN-----SNLEYKCPENNFMHYVYDQKI : 464
cry7Aa : VYIND-----KITLQTKQNVETTIGCKQDTGSGGLESHITIQPDE--HPKITLHLSGLSMNSFYDQKI : 631
cry8Aa : DYHG-----DTTEKNRFNKGNDGA--SHYETPKASLIDFQRET--QDKILLSMGFFSSGQEVYDQKI : 656
cry10Aa : FLTG-----IDTISVELPSTSRQNPATDTYADGCVTPRTVPNKTFFGEDTLTLTYGTPNHSYNYDQKI : 644
cry16Aa : DRKWKE-----GYIQQIHNISPTVG--AFSYLESITITENIDLTN--EVTYPYGRQFVEDIPSIDQKI : 642
cry19Ba : DNLG-----YQNPITYNIPPTSRD-YTELKFEDQLVDLSYVSGGP--SISSNTLWLNFSNGPVIDQKI : 632
cry24Aa : KRUPS-----TCVAPROUARHNVQGFSSNSRVEAKQLDIFITPEENN-----FAFTIDLESGGDVYDQKI : 643
      y f      l i

*      760      *      780      *      800
axmi007 : EHPDPTSSVRQNR-----KQKLETIQTKNTFFTNHTKNTLNIEATNYDID : 744
cry1Aa : EHPVAEVVFEAEYD-----LBAKAKAMTETSSNQIGLKTVDYDQV : 648
cry1Ac : EHPDPTALEAEYN-----LBAKAKAMTETSSNQIGLKTVDYDQV : 650
cry1Ia : EHPVAEVVFEAEYD-----FKADEKKTALSTSTNPRGLKTVDYDQV : 685
cry3Aa1 : EHPDPA----- : 652
cry3Ba : EHPDPA----- : 659
cry4Aa : EHPDPTSIREDREKQKLETVQIETTPANPIKNTLOSLDYDIDQAA : 722
cry6Aa : DQYNNSDWYNN----- : 475
cry7Aa : EHPDQDVNYAEKEK-----LEKAKKAMTETTE-CRNALQKVDYDQV : 677
cry8Aa : EHPDQDVNYAEQD-----LEKAKKAMTETTKD-CLRPQVDYDQV : 702
cry10Aa : EHPDPTQVLDYTEKONIKETKIMDLEVN----- : 675
cry16Aa : EHPDPTN----- : 648
cry19Ba : EHPDPTGILNQAGC-----YDTYDQNAIGVHQNYNSGNYNQEVNTYYQS : 679
cry24Aa : EHPDPTGSAFEYEGKQNTKTKAMDLIN----- : 674
      e5 p      n
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Fig. 1C